

REMARKS

The present application includes pending claims 1-29, all of which have been rejected. By this Amendment, claims 1, 7, 11, 15, 19, 25 and 27 have been amended as set forth above. The Applicant submits that the pending claims define patentable subject matter.

I. Objection To The Specification

The specification was objected to because some of the numbering referred to in the specification did not correspond to the items in the drawings. The specification has been amended as set forth above to overcome these objections.

II. Objections to the Drawings

The drawings were objected to as failing to comply with 37 CFR 1.84(p)(5) because they did not include various reference signs mentioned in the description. In particular, reference character 82 as disclosed on page 15, lines 10 and 11, was not shown in figure 4. A corrected drawing sheet marked "Replacement Sheet" showing figure 82 in compliance with 37 CFR 1.121(d) is submitted with this response.

III. The Claim Rejections – 35 USC § 112

In claim 9, line 1, the phrase "the medical imaging and support system" was objected to for lacking proper antecedent basis under 35 U.S.C. 112. The claim has been amended as set forth above to overcome this objection.

IV. Rejections Under 35 USC § 102

Claims 1-2, 4-5, 7-9, 11-12, 18-20 and 23-24 stand rejected under 35 U.S.C. § 102 (b) as being anticipated by United States Patent No. 5,305,363 ("Burke"). Claims 1-5, 7, and 9 stand rejected under 35 U.S.C. § 102(a) as being anticipated by WIPO Patent No. WO 03/002002 A1 ("Okamura"). Claims 11-15 stand rejected under 35 U.S.C. §

102(b) as being anticipated by Reissued United States Patent No. Re. 35, 035 (“Anderton”). Claims 11, 12, and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,226,064 (“Yahata”). Claims 1-4, 6-7, 25-27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 6,669,366 B2 (“Busse”). The Applicant respectfully traverses these rejections at least for the following reasons:

A. Burke Does Not Anticipate Claims 1-2, 4-5, 8-9, 11-12, 18-20, And 23-24

The Applicant first turns to the rejection of claims 1-2, 4-5, 7-9, 11-12, 18-20, and 23-24 as being anticipated by Burke. “A claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *See* MPEP at § 2131 (internal citation omitted). Further, “[t]he identical invention must be shown in as complete detail as it is contained... in the claim.” *See id.* (internal citation omitted). As discussed below, Burke does not expressly or inherently describe “every element as set forth” in the claims of the present application.

1. Burke Does Not Describe An Auxiliary Module Removably Connected To Said Imaging Device Having A Cooling Unit Configured To Cool And Circulate A Chilled Liquid That Is Cooled By The Cooling Unit Itself

Burke describes a scanning system that circulates cooling fluid through a heat exchanger to keep a target anode cool.

The housing and the anode define an annular cooling fluid path or channel 12 in intimate thermal communication with the anode face, specifically along an opposite surface of the anode. The anode can be a large continuous member or assembled form (sic) multiple sections. Optionally, the anode can have internal passages, fins, and the like to

promote thermal communication with the cooling fluid. A fluid circulating means 14 circulates the fluid through the stationary anode and housing to a heat exchanger 16 to keep the target anode cool.

See Burke at column 5, lines 1-11.

While the system utilizes a “cooling fluid,” Burke does not describe a cooling unit to chill the fluid. Instead, Burke describes only a fluid by itself that is not chilled by any cooling device. Thus, Burke does not, expressly or inherently, describe a cooling unit configured to cool and circulate chilled liquid to and from the imaging element. Claim 1, for example, recites a cooling unit that circulates “chilled liquid.” While Burke describes a heat exchanger that circulates fluid to cool an anode, it does not describe a unit that cools the temperature of the fluid being circulated to a point in which it is considered “chilled.”

Also, Burke does not describe a module that both cools and circulates cooling fluid. Burke describes a circulating means that is separate and distinct from a heat exchanger, neither of which is part of an individual module as described in claim 1 as currently amended of the present application. *See* Burke Fig.1 items 14 and 16. Further, Burke does not disclose that the circulating means, or the heat exchanger, is removably connected to the imaging system as described in claim 1 as currently amended. Thus, at least for these reasons, the Applicant respectfully submits that Burke does not anticipate claims 1-2, 4, 19 of the present application, nor claims 7-9, 20, and 23-24, which depend from claims 1 and 19.

2. Burke Does Not Describe A Cooling Duct That Is Removably Connected To Said Imaging Element

Turning now to claim 5, Burke discloses a fluid path or channel that is in intimate thermal communication with the anode face, or alternatively, internal passages through which the cooling fluid circulates. See Burke at column 5, lines 1-11. Neither of these options either expressly or inherently describe a duct that is “removably connected” to an imaging element as described in claim 5 of the present application. Thus, at least for this reason, the Applicant respectfully submits that Burke does not anticipate claim 5 of the present application.

3. Burke Does Not Describe An Auxiliary Module Having A Booster Battery Pack, Wherein Said Auxiliary Module Is Separate, Distinct, And Removably Connected To Said Medical Imaging Device.

The Applicant now turns to claim 11. Burke describes energy storage devices, such as batteries or capacitors, that are connected to an energy source used to reduce peak power demands from the electrical system of the medical facility. See Burke at column 6 line 66 – column 7 line 4. Burke does not, however, either expressly or inherently, describe a power element that is removably connected, as described in claim 11 as amended. Thus, at least for this reason, the Applicant respectfully submits that Burke does not anticipate claims 11 or 12 the present application.

4. Burke Does not Describe An Auxiliary Module Comprising Both A Cooling Unit And A Booster Battery Pack

The Applicant now turns to claim 19. Though Burke describes a heat exchanger for circulating fluid, as well as an energy storage device, Burke does not expressly or inherently describe an auxiliary module comprising devices that perform both functions, nor does it describe a module that is removably connected as described by claim 19 as

amended. The Office Action's citations to Burke reference two separate and distinct figures as anticipating claim 19.

...Burke et al. teaches **an auxiliary module (See Fig. 1 item III) comprising a cooling unit** configured to circulate chilled liquid to and from the imaging element, wherein the chilled liquid absorbs heat produced by the imaging element (See Fig. 1 item 14 and 16, Fig. 2 item 10 and 12, Col. 5 lines 1-11); **and a booster battery pack**, wherein said booster battery pack is configured to be electrically connected to the medical imaging system in order to provide additional power to the medical imaging system. (See Fig. 1 item III, Fig. 2 item 93 ad Col. 6 line 66- Col. 7 line 4)

See August 5, 2005 Office Action at page 6. Fig. 1 of Burke shows a CTR scanner system while Fig. 2 shows the x-ray source and detector. The components cited in the Office Action, however, do not expressly or inherently describe a single auxiliary module comprising both a cooling unit and a booster battery pack. At least for these reasons, the Applicant respectfully submits that Burke does not anticipate claims 19, 20 and 23-24.

B. Okamura Does Not Anticipate Claims 1-5, 7, And 9

The Applicant now turns to the rejection of claims 1-5, 7, and 9 as being anticipated by Okamura. The Examiner cites Okamura as anticipating claims 1-5, 7 and 9 of the present application and provides U.S. Patent Application Publication document US2004/0234040 A1 ("Okamura Publication") as an English language translation of the WIPO document cited.

1. Okamura Does Not Describe An Auxiliary Module Removably Connected To A Medical Imaging Device That Both Cools And Circulates Cooling Fluid

According to the Okamura Publication, Okamura discloses an X-ray tube device that is cooled by a system that uses insulating oil circulating within the interior of the X-

ray tube device, a heat exchanger, an oil pump, cooling tubes, and an additional cooling device that includes a water pump, a water tank, a refrigerator and an evaporator.

The X-ray tube device 1 is cooled by the insulating oil 3 circulating in the interior of the X-ray tube device 1. The insulating oil 3 is circulated by an **oil pump 2** between the interior of the X-ray tube device 1 and a **heat exchanger 4** for the X-ray tube device. The heat of the insulating oil 3 is exchanged with the heat of the cooling water 5 in the heat exchanger 4.

The X-ray detector 14 is accommodated in, for example, a glass casing 15, and a cooling tube 16, through which the cooling water 5 flows, is disposed on the upper surface of the glass casing 15. The **cooling device 13** is provided with a cooling **water tank 7** in which the cooling water 5 is stored, and the cooling water 5 in the cooling water tank 7 is suctioned by a cooling **water pump 6** and introduced into a **cooling tube 16** through a flexible resin cooling water tube 18. The cooling water 5, which has passed through the **cooling tube 18**, and the cooling water 5, which has passed through the heat exchanger 4, is returned into the cooling water tank 7 through the cooling water tube 18. In the cooling water tank 7, a liquefied refrigerant supplied from a **refrigerator 9** is evaporated by an **evaporator 8**, thereby the cooling water 5 is cooled.

See Okamura Publication Paragraph [0022] line 9 – Paragraph [0023] line 17.

Okamura, however, does not expressly or inherently, describe an auxiliary module that is **removably** connected to an imaging device as recited in claim 1 as amended. Further, Okamura does not expressly or inherently describe a module that by itself is able to “cool and circulate chilled liquid to and from an imaging element, where the chilled liquid absorbs heat produced by said imaging element,” as recited in claim 1, as amended. At least for these reasons, the Applicant respectfully submits that Okamura does not anticipate claims 1-5, 7, and 9.

2. Okamura Does Not Disclose A Cooling Duct That Is Removably Connected To Said Imaging Element

With respect to claim 5, Okamura discloses cooling tubes that circulate cooling water in order to cool an X-ray detector. However, Okamura does not, either expressly or inherently, describe cooling ducts that are removably connected to an imaging element as described in claim 5 of the present application. At least For this reason, the Applicant respectfully submits that Okamura does not anticipate claim 5 of the present application.

C. Anderton Does Not Anticipate Claims 11-15

The Applicant next turns to the rejection of claims 11-15, as being anticipated by Anderton. Anderton, however, does not expressly or inherently discloses an auxiliary module that is separate, distinct, and removably connected to a medical imaging device, as recited in claims 11-15. The batteries cited in Anderton (Fig 2. item 49) are a part of the C-Arm X-Ray Unit and are thus not a part of a remote, separate or removably connected auxiliary module. At least for at least these reasons, the Applicant respectfully submits that Anderton does not anticipate claims 11-15 of the present application.

D. Yahata Does Not Anticipate Claims 11, 12 And 16

The Applicant next turns to the rejection of claims 11, 12 and 16 as being anticipated by Yahata. Yahata discloses a secondary power supply source capable of supplying peak power during a scanning operation.

When the scanning operation is carried out, the DC output derived from the rectifier circuit 2 is superimposed with the DC power supplied from the secondary battery unit 5 and then supplied to the high power consumption unit.

See Yahata, column 4 lines 58 – 62.

Yahata does not, however, either expressly or inherently describe “an auxiliary module having a booster battery pack... wherein said auxiliary module **is separate, distinct, and removably connected** to said medical imaging device” as described in claim 11 of the present application. Instead, Yahata describes a secondary battery unit that is connected in circuit with a commercial power supply source, and a high power consumption unit, (e.g. an X-ray tube drive unit) such that the battery source is receiving a charge from the commercial supply source when not supplying power to the high power consumption unit.

[T]he **secondary battery unit 5A** is employed as the major power supply source to a high voltage transformer 11 via a chopper circuit 12 and a DC/AC inverter 13. As a result, the high DC power may be supplied from the secondary battery unit 5A during the scanning operation, and **this secondary battery unit 5A is charged from the single-phase commercial power source 1** during the non-scanning operation. Also, an X-ray tube 9 may be sufficiently driven by this battery unit 5A during the scanning operation.

See Id. at column 5 line 67 – column 6 line 9, and Fig 1 items 1, 3, 5, 100, column 2 line 63 – column 3 line 27.

Yahata describes a battery unit connected with both the imaging device and the commercial power supply source, Yahata does not, however, expressly or inherently describe a battery booster pack that is “separate, distinct, and removably connected to said medical imaging device,” as recited in claim 11. At least for these reasons, the Applicant respectfully submits that Yahata does not anticipate claims 11, 12, and 16 of the present application.

E. Busse Does Not Anticipate Claims 1-4, 6-7, 25-27

The Applicant next turns to the rejection of claims 1-4, 6-7, 25-26 as being anticipated by Busse. Busse discloses a system that applies a cooling medium from a heat exchanger to an X-ray detector and an X-ray source. *See* Busse column 3 lines 4-19.

Busse discloses the following:

The heat exchanger is preferably arranged outside the supporting device; however, a compact heat exchanger can also be integrated in the C arm or be arranged on the C arm when the construction of the overall system is to be smaller.

Id. column 2 line 66 – Col 3. line 3.

Busse, however, does not describe a cooling unit that is part of “an auxiliary module **removably connected** to (the) imaging device” as described in amended claim 1. Nor does Busse disclose a method of cooling an x-ray tube involving a module that is “**separate, distinct, and removably connected** to said medical imaging device” as recited in claim 25 as currently amended.

In rejecting claim 6, the Office Action states that the auxiliary module of Busse is a part of the entire system. *See* August 5, 2005 Office Action page 10 (“...entire system is mobile which includes auxiliary module”). Further, in rejecting claim 7, the Office Action states that the cooling unit is an integral part of the medical imaging system. *See Id.* (“Busse et al. describes the cooling unit as an integral part of the medical imaging system.”) Thus, the Office Action seems to concede that the module containing the cooling unit is not taught to be **removably** connected from the imaging system. For at least these reasons, the Applicant respectfully submits that Busse does not anticipate claims 1-4, 6-7, or 25-27.

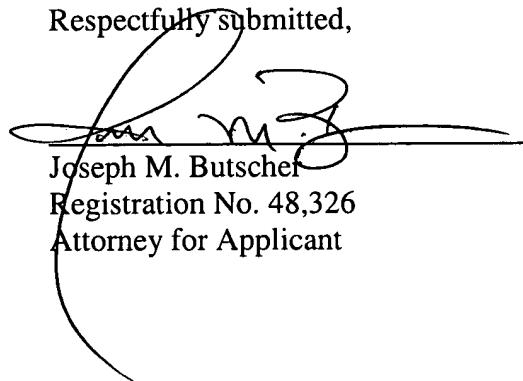
V. Claim Rejections 35 USC § 103

The Applicant respectfully submits that claims 10, 17, 21-22 and 28-29, which depend from claims 1, 11, 19, 20 and 25 , respectively, are in condition for allowance at least for the reasons discussed above.

VI. Conclusion

The Applicant respectfully submits that the pending claims of the present application should be in condition for allowance at least for the reasons discussed above and request reconsideration of the claim rejections and objections. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited to contact the undersigned attorney for the Applicant. The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Account No. 13-0017.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joe M. Butscher", is written over a horizontal line. The signature is fluid and cursive.

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